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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,844	07/28/2003	Meng H. Lean	D/A1175/690-011188-US(PAR	3181
2512	7590	02/22/2005	EXAMINER	
PERMAN & GREEN 425 POST ROAD FAIRFIELD, CT 06824			MRUK, GEOFFREY S	
			ART UNIT	PAPER NUMBER
			2853	
DATE MAILED: 02/22/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/628,844

Applicant(s)

LEAN ET AL.

Examiner

Geoffrey Mruk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-24 is/are allowed.
- 6) ☒ Claim(s) 1-9, 11 and 12 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 28 July 2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Information Disclosure Statement*

The information disclosure statement filed on 28 July 2003 does not fully comply with the requirements of 37 CFR 1.98(b) because:

- The Japanese foreign patent documents provided do not contain an English Translation or a portion thereof.

Since the submission appears to be *bona fide*, applicant is given **ONE (1) MONTH** from the date of this notice to supply the above mentioned omissions or corrections in the information disclosure statement. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) OR (b). Failure to timely comply with this notice will result in the above mentioned information disclosure statement being placed in the application file with the noncomplying information **not** being considered. See 37 CFR 1.97(i).

### *Specification*

The disclosure is objected to because of the following informalities:

- The written corrections in throughout the specification are objected to. The Examiner requests a substitute specification be submitted with proper corrections made.

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- The specification on page 7, line 4 uses “spi” as a unit of measure for resolution. The Examiner suggests using dot per inch (dpi) as the unit of measure for resolution.

Appropriate correction is required.

### ***Claim Objections***

Claims 14 and 15 objected to because of the following informalities:

- Claims 14 and 15 lack antecedent basis since the ballistic aerosol making print head is not stated in independent claim 13.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-7, and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Floyd et al. (US 6,416,158 B1).

With respect to claim 1, Floyd discloses a ballistic aerosol marking print head (Figure 2, element 34) for depositing marking material (Column 4, lines 60-65), the print head comprising:

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- a gas channel (Figure 12, element 46) coupled to a propellant source (Figure 2, element 33);
- a reservoir (Figure 12, element 28) in communication with the gas channel through an aperture (Figure 9, element 42);
- a first gating electrode (Figure 12, element 126b) located proximate a first side of the aperture;
- a second gating electrode (Figure 12, element 126c) located proximate a second side of the aperture;
- a third gating electrode (Figure 12, element 130) located in the gas channel;
- a first voltage source (Column 10, lines 52-56) having a first phase (Figure 12, element  $\phi_2$ ) connected to the first gating electrode;
- a second voltage source (Column 10, lines 52-56) having a second phase (Figure 12, element  $\phi_3$ ) in phase separation from the first phase (Column 10, lines 57-67; Column 11, lines 1-17), the second voltage source connected to the second gating electrode; and
- a third voltage source (Column 10, lines 52-56) having a third phase (Figure 12, element  $\phi_1$ ) in phase separation from the second phase (Column 10, lines 57-67; Column 11, lines 1-17), the third voltage source connected to the third gating electrode;
- wherein the first phase, second phase and third phase are sequenced so that marking material is metered from the reservoir

into a propellant stream in the gas channel (Column 12, lines 31-41).

With respect to claim 2, Floyd discloses at least one of the first gating electrode (Figure 12, element 126b), the second gating electrode (Figure 12, element 126c) or third gating electrode (Figure 12, element 130) is connected to a corresponding one of the first voltage source, second voltage source or third voltage source so that the at least one of the first gating electrode, the second gating electrode or third gating electrode is selectively operable in one of a continuous mode or an on-demand mode (Column 2, lines 24-43).

With respect to claim 3, Floyd discloses the third gating electrode is connect to a data line for selectively operating the third gating electrode (Column 12, lines 22-31).

With respect to claim 5, Floyd discloses the gas channel (Figure 12, element 46) comprises a nozzle (Figure 5A, element 56) and wherein the third gating electrode (Figure 12, element 130) is opposing the aperture ((Figure 9A, element 42).

With respect to claim 6, Floyd discloses the third phase lags the second phase by approximately 90 degrees and the second phase lags the first phase by approximately 90 degrees (Column 10, lines 57-67; Column 11, lines 1-10).

With respect to claim 7, Floyd discloses wherein the first, second and third voltage sources are alternating current sources or phased direct current sources having the same frequency (Column 10, lines 52-56).

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With respect to claim 11, Floyd discloses the aperture (Figure 9A, element 42) has a centerline substantially perpendicular to the direction of flow of the propellant stream (Column 5, lines 27-32).

With respect to claim 12, Floyd discloses wherein the marking material comprises low agglomeration toner having a particle size of 6 micrometers (Column 7, lines 43-49).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Floyd et al. (US 6,416,158 B1) in view of Vo et al. (US 6,290,342 B1).

With respect to claim 4, Floyd discloses all the limitations of the claim with the exception of the aperture (Figure 9A, element 42) having a diameter less than 65 micrometers.

Vo discloses the electrodes having a width between 5 micrometers and 50 micrometers (Column 4, lines 34-38) and formation of these electrodes using a conventional complementary metal oxide semiconductor (CMOS) process (Column 5, lines 39-44).

At the time of the invention, it would have been obvious for one of ordinary skill in the art to use the electrodes disclosed by Vo in the print head of Floyd. The motivation for doing so would have been to form the required driving circuitry simultaneously with the electrode grid using conventional complementary metal oxide semiconductor (CMOS) techniques in order to simplify manufacture, reduce cost, and reduce the size of the completed print head (Column 2, lines 21-29).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Floyd et al. (US 6,416,158 B1) in view of Floyd et al. (US 6,328,436 B1).

With respect to claim 8, Floyd et al. (US 6,416,158 B1) discloses all the limitations of the claim with the exception of a traveling wave grid having first, second and third electrodes located within the reservoir.

Floyd et al. (US 6,328,436 B1) discloses the vertical walls of the marking material reservoirs have embedded electrodes for electrostatic particulate transport (Column 9, lines 44-64).

At the time of the invention, it would have been obvious for one of ordinary skill in the art to use the electrostatic particulate transport of Floyd et al. (US 6,328,436 B1) in the material reservoir of Floyd et al. (US 6,416,158 B1). The motivation for doing so would have been for the benefit of a marking material reservoir that provides efficient and uniform sourcing of toner or other marking material over the entire array of channels (Column 9, lines 41-43).

With respect to claim 9, Floyd et al. (US 6,416,158 B1) discloses all the limitations of the claim with the exception of a traveling wave grid further



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comprising a fourth electrode connected to a fourth voltage source having a fourth phase, the fourth phase lagging the third phase by approximately 90 degrees.

Floyd et al. (US 6,328,436 B1) discloses marking material reservoir has further formed therein driving circuitry for establishing and controlling a traveling wave across a plurality of electrodes (claim 5).

At the time of the invention, it would have been obvious for one of ordinary skill in the art to use the plurality of electrodes disclosed by Floyd et al. (US 6,328,436 B1) in the marking material reservoir of Floyd et al. (US 6,416,158 B1). The motivation for doing so would have been for the benefit of a reservoir that provides efficient and uniform sourcing of toner or other marking material over the entire array of channels (Column 9, lines 41-43).

### ***Allowable Subject Matter***

Claims 13 - 23 are allowed.

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

With respect to claim 13, the prior art of record fails to teach:

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- a first voltage source having a first phase and being connected to both the first gating electrode and a first electrode of the traveling wave grid;
- a second voltage source having a second phase and being connected to both the second gating electrode and a second electrode of the traveling wave grid;
- and a third voltage source having a third phase and being connected to both the third gating electrode and a third electrode of the traveling wave grid.

With respect to claim 23, the prior art of record fails to teach:

- connecting a first voltage source having a first phase to both the first gating electrode and a first electrode of the traveling wave grid;
- connecting a second voltage source having a second phase lagging the first phase to both the second gating electrode and a second electrode of the traveling wave grid;
- and connecting a third voltage source having a third phase lagging the second phase to both the third gating electrode and a third electrode of the traveling wave grid.

With respect to claims 14-22, the claims are dependant on claim 13.

With respect to claim 10, the prior art of record fails to teach the distance from the second gating electrode to the third gating electrode is less than 100 micrometers.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Peeters et al. (US 6,116,718) discloses a print head (Figure 33) for a Ballistic Aerosol Marking apparatus, but fails to teach an electrical circuit diagram and electrical phasing between the first, second, and third electrodes (Figure 33, elements 292 and 298).

Vo et al. (US 6,290,342 B1) discloses an electrical circuit diagram (Figure 2) and electrical phase shifting (Figure 8) for the first and second electrodes. However, Vo fails to disclose a third electrode, located in a gas channel, in the print head apparatus. Also, Vo discloses the height and width of the first and second electrodes (Column 4, lines 30-38), but fails to teach the dimensions of the gas channel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on 7am - 330pm.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM  
2/10/2005

GM

  
MANISH SHAH  
Primary Examiner.